

Loss / Near Loss (L/NL)

Loss/Near Loss ID : 23483

Status : Closed

Short Description : Hydrocarbon spill (Approx. 100 BBLS) to secondary containment at #7 Pump Station

Responsible Organization : MFG|RIC|Ops|B&S/U&E ABU|B&S/C Crew(RICREF)

Loss Type : Loss

**Actual Severity Classification : Level 3a
(Loss Only)**

Potential Severity Classification : Level 3a

Location of Loss/Near Loss : Rich|B&S | Pump Stations | #7 Pump Station

Date/Time Occurred : 10/8/2011 10:45:00 AM

Date/Time Reported : 10/8/2011 10:45:00 AM

Process Safety Related Event : No

Type of Activity : Operations

Loss/Near Loss Description : The Crude Pump Station (CPS) Operator was at #7 Pump station to turn on P-6 for a displacement on the 16" crude after the Mississippi Voyager had finished discharging HYFCC to T-1899. The CPS Operator noticed that there was a 2-3" layer of hydrocarbon throughout the entire area of the secondary containment of the Pump Station. The CPS Operator later related that during first rounds this morning at approximately 0800Hrs he could smell hydrocarbon but could not locate where it was coming from and the secondary containment was empty.

Both the Crude Head Operator and Shift Team Leader were notified and Chevron Fire was called out. All transfers through the pump station were shutdown including a diesel discharge to T-3215 on the 2 DB and a diesel slops discharge on the 16" Ballast to T-1504 from the Mississippi Voyager.

Chevron Fire conducted area monitoring and there was no detectable LEL and Benzene readings were at .10 (no PPE required).

Notifications were made to the RSL, B&S Section Head and ABU manager.

We are currently pumping out the secondary containment to T-1504 using the sump pumps and are also using two vacuum trucks to assist in draining the sump.

When the secondary containment is drained we will be able to conduct a more thorough check of the piping in the pump station for leaks.

We have an Operator standing by the pump station monitoring the area. Wharf Safety Operators are checking lines on their side of the pump station. We estimate this spill to be approximately 100 barrels.

LPS Alert or Bulletin : No Alert/Bulletin Needed

Immediate Corrective Action Taken : All transfers across #7 PS shutdown.
Notifications made.
Inspections checking lines.

Injury not OSHA-reportable to the Responsible Organization's Site : No

Address 1 :

Address 2 :

Address 3 :

City :

Country :

State/Province :

Zip/Postal Code :

Date Entered : 10/8/2011 1:37:04 PM

Entered By : QUINONEZ, DANIEL (DJQU)

Required for Transportation (MVC) Losses



Loss / Near Loss (L/NL)

Weather : Clear

Temperature : 32 to <80 F (0 to <27 C)

Lighting : Day

Loss Subtypes

Loss

Environmental

Loss of Containment

Responsibilities

Supervisor/Lead Responsible : LASSEN, GARY - LWIL

Management Sponsor : MAUER, JON - JMAU

Injury/Illness Coordinator :

Reported By : QUINONEZ, DANIEL - DJQU

Involvement - Witnesses

Witness Name	Address	Phone
Darren Johnson	Chevron B&S	242-4582

Equipment

Equipment Involved	Critical	Comment
Fixed Equipment: Piping	No	

Attachments / Links

Module	ID	Type	File Name / Link	Comment/Description	Upload Date
Investigation	13692	LINK	https://collab001-hou.sp.chevron.net/sites/dsgmfgoe/LP_SOut/RIIDocLib/TapRoot%20Package%2023483.pdf	Revised report	11/3/2011 10:44:52 AM

Consequences

ID	Type	Party Involved	Status
742	Environmental	QUINONEZ, DANIEL (DJQU)	Closed
3980	Z For Metrics Only - Do Not Use		

Consequence - Environmental

Environmental ID : 742

Status : Closed

Discovery Date/Time : 10/8/2011 10:45:00 AM



Loss / Near Loss (L/NL)

Ownership : Chevron

Reported By : QUINONEZ, DANIEL (DJQU)

Environmental Loss Types : Operational Leak

Shelter in Place : No

Wind Speed : 2 MPH

Wind Direction : 138 deg

Number of Complaints : 0

**Number of Third Parties
Hospitalized from Release** : 0

**Number of Third Party Fatalities
from Release** : 0

**Equipment from which the release
originated** : Piping

If other Equipment, specify :

Quantity					
Material Spilled or Released	Released to	Unit of Measure	Release Amount	Recovered Amount	Hazardous Property
Jet Fuel	Release to Sec. Containment	BBL - US	100.00	100.00	Flammable

Consequence - Z For Metrics Only – Do Not Use

Loss of Containment (PSE) ID : 3980

PSE Tier Category : Tier 2

Location Function : Refining

Process System Identifier : Marine/jetty

Mode of Operation : Normal

Location Detail : ~100 bbls of jet fuel spilled to secondary containment at the #7 pump station at a rate of 4.2 bbls/hour, exceeding the threshold of 1bbl/hour.

Point of Release : Pump

Maximum Release Rate per Hour : 4

Maximum Release Rate UOM : Barrels

PSE Community Response : Not Applicable

PSE Related Injury/Illness : Not Applicable

LOPC Type of Material : Flammable

LOPC Location : Outdoor Release

LOPC Material Threshold Category : T2: Threshold Release Category 6

PSE Related Property Damages : Not Applicable



Loss / Near Loss (L/NL)

Release from Pressure Relief Device (PRD) : Not Applicable

PRD Release :

If PRD Release, Specify Material :
Threshold Category

Journal (Loss/Near Loss)

Personnel	Date	Journal Note	Type
GUTIERREZ, DARREL (DGFH)	1/27/2012 12:00:00 AM	Added New LOC Consequence	Sys Admin Comments
DECKER, DENNIS (DDEH)	11/3/2011 12:00:00 AM	Changed severity from 2 to 3a per Jon Mauer	Workflow Enforced

Investigation

Investigation ID : 13692

Status : Closed

Investigation Date : 10/8/2011 12:00:00 AM

Type : TapRoot

Sensitive/Commercial : No

Responsibilities

Investigation Team Lead : FRYER, DOUGLAS - DTFR

Primary Contact : QUINONEZ, DANIEL - DJQU

Management Sponsor : MAUER, JON - JMAU

Reviewer(s) :

Investigation Team Member(s) : CLARK, SEAN - SCJZ
LEWIS, JOHN - JLFO
PRATHER, SETH - SEAP
RAIFORD, COLE - CRBW

Taproot™ Facilitator : LASSEN, GARY - LWIL

OE Tenets & Processes

OE Tenets Violated	Note
01-Operate within design and environmental limits	
OE Processes Implicated *	Note
Management of Change (MOC)	



Loss / Near Loss (L/NL)

Journal (Investigation)

Created By	Date	Journal Note	Journal Type
FRYER, DOUGLAS (DTFR)	11/1/2011 12:00:00 AM	Broke out all the solutions and paired them with 1:1 relationships w/ root casues. Created new solutions and deleted the old solutions #96525,#96530,#96531,#96560, and #96561	General Note



Loss / Near Loss (L/NL)

Root Cause				
Root Cause	Factors	Solution / Action Item Id	Solution / Action Item Status	Solution / Action Item Due Date
Work Package/ Permit NI	E. Lack of or inadequate procedures: 6-A deficiency in quality check/inspection caused a problem to be missed (instructions or inspection techniques/measurement devices inadequate etc)	96524	Closed	11/30/2011 12:00:00 AM
Hazard Analysis NI	E. Lack of or inadequate procedures: 4- Procedure/acceptable practice exists and technically right, but needs to be improved (improve clarity, cover additional scenario/steps, etc)	96529	Closed	11/30/2011 12:00:00 AM
Inspection not required	G. Inadequate tools or equipment: 8-System or Equipment is designed in such a way that errors are undetectable or unable to be detected before a failure/incident occurs	96559	Closed	8/31/2012 12:00:00 AM
Additional Consideration	G. Inadequate tools or equipment: 3-Equipment is not designed properly	96644	Closed	8/31/2012 12:00:00 AM
Work Package/ Permit NI	F. Inadequate communication of expectations regarding procedures or standards: 5- Communication during job preparation needs improvement (pre-job briefing, work package/permit, job walk-thru, etc).	96953	Closed	1/31/2012 12:00:00 AM
Hazard Analysis NI	G. Inadequate tools or equipment: 3-Equipment is not designed properly	96957	Closed	1/31/2012 12:00:00 AM
Hazard Analysis NI	F. Inadequate communication of expectations regarding procedures or standards: 5- Communication during job preparation needs improvement (pre-job briefing, work package/permit, job walk-thru, etc).	96959	Closed	1/31/2012 12:00:00 AM
Inspection not required	E. Lack of or inadequate procedures: 6-A deficiency in quality check/inspection caused a problem to be missed (instructions or inspection techniques/measurement devices inadequate etc)	96962	In Progress	10/31/2012 12:00:00 AM
inspection not required	E. Lack of or inadequate procedures: 7-Management not made aware of an issue due to inadequate audits/evaluations (audits performed infrequently/not thorough/not sufficiently independent)	96964	Closed	2/29/2012 12:00:00 AM

Solution/Action Item



Loss / Near Loss (L/NL)

Solution/Action Item ID : 96524

Status : Closed

Source : Investigation

Source ID : 13692

Responsible Organization : MFG|RIC|Ops|B&S/U&E ABU|B&S|C Crew(RICREF)

Sensitive/Commercial : No

Root Cause : Work Package/ Permit NI

Factor : E. Lack of or inadequate procedures : 6-A deficiency in quality check/inspection caused a problem to be missed (instructions or inspection techniques/measurement devices inadequate etc)

Solution Type (user entered) : MOC: Preventative

Solution : Modify MOC database HSE form to prompt that the Thought Provoking Questions are reviewed.

Date Assigned : 10/31/2011 12:00:00 AM

Due Date : 11/30/2011 12:00:00 AM

Completion Date : 11/4/2011 12:00:00 AM

Action Taken : HSE form modified to require Yes/No selection if the Thought Provoking Questions were reviewed.

V&V Date : 12/7/2011 12:00:00 AM

V&V Comments : Spot checked about 10 MOC's after 11/4 and found all had the box checked that the thought provoking questions were reviewed.

Person Responsible : LASSEN, GARY - LWIL

Supervisor/Lead Responsible : DRAPER, KAREN - KAMR

Solution/Action Item

Solution/Action Item ID : 96529

Status : Closed

Source : Investigation

Source ID : 13692

Responsible Organization : MFG|RIC|Ops|B&S/U&E ABU|B&S|C Crew(RICREF)

Sensitive/Commercial : No

Root Cause : Hazard Analysis NI

Factor : E. Lack of or inadequate procedures : 4-Procedure/acceptable practice exists and technically right, but needs to be improved (improve clarity, cover additional scenario/steps, etc)

Solution Type (user entered) : MOC: Preventative



Loss / Near Loss (L/NL)

Solution : Modify MOC database Design Review form to include Hydraulic Review checkbox.

Date Assigned : 10/31/2011 12:00:00 AM

Due Date : 11/30/2011 12:00:00 AM

Completion Date : 11/4/2011 12:00:00 AM

Action Taken : Database modified to include Hydraulic Review checkbox in the Design Review form.

V&V Date : 12/7/2011 12:00:00 AM

V&V Comments : Verified that the Hydraulic Review has been added to the Design review within the MOC database.

Person Responsible : LASSEN, GARY - LWIL

Supervisor/Lead Responsible : DRAPER, KAREN - KAMR

Solution/Action Item

Solution/Action Item ID : 96559

Status : Closed

Source : Investigation

Source ID : 13692

Responsible Organization : MFG|RIC|Ops|B&S/U&E ABU|B&S|C Crew(RICREF)

Sensitive/Commercial : No

Root Cause : Inspection not required

Factor : G. Inadequate tools or equipment : 8-System or Equipment is designed in such a way that errors are undetectable or unable to be detected before a failure/incident occurs

Solution Type (user entered) : MOC: Corrective

Solution : Redesign sump and pump to include level indication, high level alarms and run status of pump.

Date Assigned : 10/31/2011 12:00:00 AM

Due Date : 8/31/2012 12:00:00 AM

Completion Date : 8/28/2012 12:00:00 AM

Action Taken : Sump design complete
Installation during week of 8/27

RIC-26202 B&S / 7PS / Sump / P-2 and P-2A / Level Indication and Reliability Upgrade of APS / (CONSTR/ACD)

V&V Date : 9/12/2012 12:00:00 AM

V&V Comments : Sump Level indicator and alarms (at two levels) were installed, pump status, and pump run status was historized

Person Responsible : SINGLETON, DARYL - DADS

Supervisor/Lead Responsible : BASCO, RODOLFO - ROTB



Loss / Near Loss (L/NL)

Solution/Action Item

Solution/Action Item ID : 96644

Status : Closed

Source : Investigation

Source ID : 13692

Responsible Organization : MFG|RIC|Ops|B&S/U&E ABU|B&S|C Crew(RICREF)

Sensitive/Commercial : No

Root Cause : Additional Consideration

Factor : G. Inadequate tools or equipment : 3-Equipment is not designed properly

Solution Type (user entered) : MOC: Corrective

Solution : Consider rerouting discharge to primary containment (T-1504)

Date Assigned : 10/31/2011 12:00:00 AM

Due Date : 8/31/2012 12:00:00 AM

Completion Date : 8/15/2012 12:00:00 AM

Action Taken : Job is assigned in TSS job log and T1504 options will be considered as part of the CPDEP process.
RIC-12329 (Local Approval) Separate PRD Discharge at PS 7 PEFU DADS RIC-B&S-T&B RIC-Designs RIC-BSUE
Plant Supt Medium 7 11/10/2008 12/31/2010

V&V Date : 9/10/2012 12:00:00 AM

V&V Comments : The installation of a level indicator at the 7PS sump will help eliminate overflow of the sump in case of a PRD release.

Re-routing the PRD discharge will help reduce the load to the sump.

Person Responsible : SINGLETON, DARYL - DADS

Supervisor/Lead Responsible : BASCO, RODOLFO - ROTB

Solution/Action Item

Solution/Action Item ID : 96953

Status : Closed

Source : Investigation

Source ID : 13692

Responsible Organization : MFG|RIC|Ops|B&S/U&E ABU|B&S|C Crew(RICREF)



Loss / Near Loss (L/NL)

Sensitive/Commercial : No

Root Cause : Work Package/ Permit NI

Factor : F. Inadequate communication of expectations regarding procedures or standards : 5-Communication during job preparation needs improvement (pre-job briefing, work package/permit, job walk-thru, etc).

Solution Type (user entered) : LPS: Organizational

Solution : B&S Management will share the investigation with those involved in the original HSE and gain personal commitment from these individuals to conduct thorough evaluations in all future HSE reviews.

Date Assigned : 11/1/2011 12:00:00 AM

Due Date : 1/31/2012 12:00:00 AM

Completion Date : 12/12/2011 12:00:00 AM

Action Taken : Conducted several conversations with those that were involved in the original HSE on the importance of correctly and completely using the tools available to identify and evaluate risks associated with proposed changes. The team members understand the concerns and are working to ensure future HSE/PHA/PSSRs are completed inline with our expectations around Operational Excellence.

V&V Date : 12/15/2011 12:00:00 AM

V&V Comments : Conversations were conducted with team members involved in the MOC/HSE. Section Head and OA (Level 2 reviewer) are committed to improving the execution of our PSM processes at B&S.

Person Responsible : MAUER, JON - JMAU

Supervisor/Lead Responsible : MAUER, JON - JMAU

Solution/Action Item

Solution/Action Item ID : 96957

Status : Closed

Source : Investigation

Source ID : 13692

Responsible Organization : MFG|RIC|Ops|B&S/U&E ABU|B&S|C Crew(RICREF)

Sensitive/Commercial : No

Root Cause : Hazard Analysis NI

Factor : G. Inadequate tools or equipment : 3-Equipment is not designed properly

Solution Type (user entered) : MOC: Corrective

Solution : Ensure PRDs are set appropriately for all operating scenarios

Date Assigned : 11/1/2011 12:00:00 AM

Due Date : 1/31/2012 12:00:00 AM

Completion Date : 11/18/2011 12:00:00 AM



Loss / Near Loss (L/NL)

Action Taken : The PRD's on particulate filters V-810A & V-810B, PC-328 and PC-329, were reviewed to ensure the set pressures are adequate for all operating scenarios. There are two operating scenarios – jet export and jet import.

For jet export service the pressure on the system is less than 150 psig based on head pressure from the product supply tanks, T-1798 and T-1799. The system is gravity fed only and does not use any booster pumps. Thermal PRD's at V-810A/B set above 180 psig would be acceptable.

For jet import service the system pressure is supplied by the pumps onboard the offloading vessel and P-22 in #7 PS is used to boost the pressure. P-22 has the ability to provide over 300 psig of pressure. The pressure of the system is kept below the 285 psig pipe class limit with the use of a pressure control valve downstream of P-22. The operating pressure of the system under normal operation is under 250 psig. However, if the filter elements inside of V-810A and V-810B begin to plug the PC valve can be opened manually to maintain offloading rates. If the PC is opened due to plugging, the system can operate at the 285 psig pipe class limit. This operating posture was demonstrated during the 2011 4CU shutdown.

The thermal PRD's in question are located between P-22 and V-810A and V-810B, which exposes them to increased pressure in the scenario described above. The thermal relief valves set at their max setting of 285 psig would begin to lift at 90% of the set pressure, or 257 psig. With this being the case the existing valves could be lifted regularly during importing. In order to have thermal relief valves installed that protect the system during both exports and imports the system will have to be reviewed and modified.

The immediate mitigation is to reset the existing PRD's to 270 psig and place them in service. This change will be documented through the MOC process. This will provide thermal relief protection to the system while it is in export service, which is the normal service condition. In order to provide protection when the system is used for imports during a 4CU shutdown, Designs Engineering has added a job to the 2012 job log to perform a review of the system and issue a construction package to make any required modifications. The MOC process will be used to document any changes.

V&V Date : 1/31/2012 12:00:00 AM

V&V Comments : Checked Meridium and PC-328 and PC-329 have been reset to relieve at 270 psig. MOC #24442 has been initiated to document change

Person Responsible : RAIFORD, COLE - CRBW

Supervisor/Lead Responsible : LOWELL, ALAN - ALKL

Journal (Action Item)			
Created By	Date	Journal Note	Journal Type
DECKER, DENNIS (DDEH)	1/10/2012 12:00:00 AM	Put back to in progress to update solution per Rudy Basco.	Workflow Enforced

Solution/Action Item

Solution/Action Item ID : 96959

Status : Closed

Source : Investigation

Source ID : 13692

Responsible Organization : MFG|RIC|Ops|B&S/U&E ABU|B&S|C Crew(RICREF)

Sensitive/Commercial : No

Root Cause : Hazard Analysis NI

Factor : F. Inadequate communication of expectations regarding procedures or standards : 5-Communication during job preparation needs improvement (pre-job briefing, work package/permit, job walk-thru, etc).



Loss / Near Loss (L/NL)

Solution Type (user entered) : LPS: Organizational

Solution : Technical Design group will share the investigation learning's and discuss the importance of conducting thorough Hydraulic evaluations with regards to MOC's requiring piping circuit modifications.

Date Assigned : 11/1/2011 12:00:00 AM

Due Date : 1/31/2012 12:00:00 AM

Completion Date : 2/1/2012 12:00:00 AM

Action Taken : This action item was completed and V&V'ed in November 2011 by discussing the design details with the DED group.

V&V Date : 3/14/2012 12:00:00 AM

V&V Comments : Verified with the DENT meeting facilitator that the above discussion took place at the November Dent meeting. The discussion was facilitated by the BS&UE Lead engineer.

Person Responsible : LOWELL, ALAN - ALKL

Supervisor/Lead Responsible : KINKELA, DONALD - DOFK

Solution/Action Item

Solution/Action Item ID : 96962

Status : In Progress

Source : Investigation

Source ID : 13692

Responsible Organization : MFG|RIC|Ops|B&S/U&E ABU|B&S|C Crew(RICREF)

Sensitive/Commercial : No

Root Cause : Inspection not required

Factor : E. Lack of or inadequate procedures : 6-A deficiency in quality check/inspection caused a problem to be missed (instructions or inspection techniques/measurement devices inadequate etc)

Solution Type (user entered) : MOC: Preventative

Solution : Develop and implement routine duty to test level indication, high level alarms and pump.

Date Assigned : 11/1/2011 12:00:00 AM

Due Date : 10/31/2012 12:00:00 AM

Completion Date :

Action Taken :

V&V Date :

V&V Comments :

Person Responsible : SINGLETON, DARYL - DADS

Supervisor/Lead Responsible : BASCO, RODOLFO - ROTB



Loss / Near Loss (L/NL)

Solution/Action Item

Solution/Action Item ID : 96964

Status : Closed

Source : Investigation

Source ID : 13692

Responsible Organization : MFG|RIC|Ops|B&S/U&E ABU|B&S|C Crew(RICREF)

Sensitive/Commercial : No

Root Cause : inspection not required

Factor : E. Lack of or inadequate procedures : 7-Management not made aware of an issue due to inadequate audits/evaluations (audits performed infrequently/not thorough/not sufficiently independent)

Solution Type (user entered) : LPS: Organizational

Solution : B&S Business Unit evaluate other sumps in the division, subject to similar risks. The evaluation should determine if the pump and sump instrumentation is appropriate to mitigate potential overflow incidents. If risks are identified, carry to the URB process for evaluation and prioritization with other ABU risks.

Date Assigned : 11/1/2011 12:00:00 AM

Due Date : 2/29/2012 12:00:00 AM

Completion Date : 1/20/2012 12:00:00 AM

Action Taken : Identified P1A sump pump at 21PS and the P2/P2A sump at 7 pump station as concerns. Both have been listed on the URB and assigned owners and due dates. Also comparator and 17 PS sump project already in active status with DED.

V&V Date : 1/24/2012 12:00:00 AM

V&V Comments : Reviewed all sumps in B&S and assessed the potential & likelihood of risks.

Person Responsible : SINGLETON, DARYL - DADS

Supervisor/Lead Responsible : BASCO, RODOLFO - ROTB



Loss / Near Loss (L/NL)

Stewardship

Loss/Near Loss Quality Review

Quality Review ID : 121227

Status : Closed

Responsible Organization : MFG|RIC|Ops|B&S/U&E ABU|B&S|C Crew(RICREF)

Date Conducted : 1/2/2012 12:00:00 AM

Created Date : 12/8/2011 9:45:43 AM

Steward's Additional Comments : I thought the tap root report was very thorough and well done.

Steward (Responsibilities) : YESAVAGE, GARY - GGYE

Results

Item / Name	Result	Comments
1. Writes thorough description of loss/near loss? *	Yes	Through the LI and the tap root report, the incident was well described.
2. Identifies root cause(s) by explaining why the near loss or loss occurred? *	Yes	The investigation highlights how complicated our business is. Changing the filters on imported jet due to previous problems can lead to hydraulic issues if not thoroughly studied.
3. Selects factor(s) from the FSF that matches the root cause? *	Yes	I agree that the primary factors were organizational and not personal.
4. Develops solution(s) that matches the factor and addresses root cause? *	Yes	I believe that adding the isolation of the thermal PRDs to the booster pump start up procedure is a good idea.
5. Solution is feasible and maintainable? *	Yes	As mentioned above, since this is only an issue during importing product, adding the isolation of the PRDs in question to the booster pump start up procedure is a good idea
6. Appropriate reviewers assigned? *	Yes	



Memorandum

To Jon Mauer / Rudy Basco
From Doug Fryer / Gary Lassen
Date 10/20/2011
Re Completed TapRooT® Investigation – Impact ERM #23483

Event Title: #7 Pump Station Jet Spill to Secondary Containment

Impact ERM Record Number(s): 23483

PSM Event: No

PSM Near Miss: No

RISO MCAR Event: No

RISO MCAR Near Miss: No

1. Incident Summary: Operations found the 7PS sump overflowed with jet during routine rounds. The sump pump did not start on auto but was turned on manually by Operations. Vac trucks were also called in to help lower the level. P-22 was shut down and the import was stopped. Operations and Inspections reviewed the piping in the area to find the source of the leak but nothing was found. Once the jet level was removed and the sump entry trench was visible it was noticed that a 1" line was draining to the sump. Operations tracked the line back to PC-328 & PC-329, the PRD's on V-810A/B. The filters were bypassed and the PRD's were blocked in and the leak was stopped.

The discharge pressure from P-22 was ranging from 220 – 250 psig during importing according to Operations. This is a reasonable pressure to expect based on the pump curve. This pressure is above the 200 psig set pressure of PC-328 & PC-329 which caused the PRD's to lift. Once P-22 was shut down the PRD's should have reseated, but in this case they did not. This is known because the PRD's were still relieving to the sump when the import was stopped. The only pressure in the system was head pressure from T-1798/99 which was ~ 100 psig.

In 2001/2002, P-22 was installed to act as a jet import booster pump. This pump is only required when the crude unit is shutdown and jet must be imported. P-22 was used for the first time during the 2007 crude unit shutdown. In 2007, filtering was completed using filters in 21 pump station. There were issues with particulates during the jet imports so a lesson learned was to consider a different filter approach during the 2011 crude unit shutdown. In early 2011 it was determined that V-810A/B would be used to filter imported jet. Note: V-810A/B was not used in 2007.

V-810A & V-810B was recommissioned in April 2011 after being out of service for 10+ years. MOC #23246 was submitted to cover this work. As part of this project, the thermal PRD's on the filter discharge (when exporting) were also reinstalled. The valves were reset to the same relieving pressure that they were set at previously, 200 psig. New filter elements were specified for both export and import service and have been installed/replaced as needed by zone Maintenance. The system has been used for several JP8 exports with no issues.



2. **Initial Conditions:** Transfer of Jet from Wharf to T-1798 through V-810A/B filters using P-22 booster pump.

3. **Initiating Event:** Overpressure of PSV PC-328/329

4. **Incident Description:** Jet spill to secondary containment.

a. **On-Site Impact:** 100 barrels of Jet spilled to secondary containment.

b. **Off-Site Impact:** N/A

5. **What Went Well:**

CFD/Operations response and clean up efforts once the spill was detected.

6. **Immediate Corrective Actions:** V-810A/B filters bypassed an isolated. #7 Basin sump pump started in manual. Vacuum trucks called in to assist with clean up efforts.

7. **Root Causes & Corrective Actions:**

Causal Factor #1: Design Review and HSE did not evaluate if PRD set pressure was appropriate for all operating scenarios

Background: A thorough evaluation of the impact of the change on the system should have reviewed all operating scenarios

C/A: Modify MOC database HSE form to prompt that the Thought Provoking Questions are reviewed.

C/A: B&S Management will share the investigation with those involved in the original HSE and gain personal commitment from these individuals to conduct thorough evaluations in all future HSE reviews.

C/A: Modify MOC database Design Review form to include Hydraulic Review checkbox.

C/A: Ensure PRDs are set appropriately for all operating scenarios.

C/A: Technical Design group will share the investigation learning's and discuss the importance of conducting thorough Hydraulic evaluations with regards to MOC's requiring piping circuit modifications.



Causal Factor #2: Sump pump is in Auto but does not start, no routine testing of pump

Background: Had pump been working it would have significantly mitigated the consequences

C/A: Redesign sump and pump to include level indication, high level alarms and run status of pump.

C/A: Develop and implement routine duty to test level indication, high level alarms and pump.

C/A: B&S Business Unit evaluate other sumps in the division, subject to similar risks. The evaluation should determine if the pump and sump instrumentation is appropriate to mitigate potential overflow incidents. If risks are identified, carry to URB process for evaluation & prioritization with other ABU risks.

Additional Consideration #1: Jet flows through drain line to ditch and then to #4 basin secondary containment sump

C/A: Consider rerouting discharge to primary containment (T-1504)

8. References & Attachments:

Appendix I - Tap RooT® Events & Causal Factors Chart®

Appendix II - RooT Cause Analysis®.

9. Additional Information:

Investigation Team:

<u>Name</u>	<u>Discipline / Role</u>	<u>Current Position</u>
Doug Fryer	Team Lead	IT Manager
Gary Lassen	TapRooT Facilitator	PSM Specialist
Cole Raiford	Technical Design SME	Design Team Lead
Seth Prather	Operations SME	Operations STL
Sean Clark	Team Member	USW H&S Rep
John Lewis	Team Member	WPIA

Date & Time Event Began: 10/07/2011 @ 1345

Date & Time Safe and Controlled Conditions Were Established: 10/08/2011 @ 1330

Date & Time Investigation Started: 10/08/2011 @ 0800

October 20, 2011

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Business Units and Plants Affected: B&S #7 Pump Station

Type of Incident: Environment Level 3A - Petroleum or petroleum product spills to land or secondary containment from 50 bbl to 500 bbl

Management Sponsor:

Jon Mauer

Tenets Followed:

10. Always involve the right people in decisions that affect procedures and equipment.

Tenets Compromised:

1. Always operate within design and environmental limits.

Cost of Incident (if applicable):

Direct Cost:	\$	Lost Production:	\$	Total Incident Costs:	\$
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Chemicals released (if applicable):

Jet	100 Barrels	MSDS Number
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Weather Conditions:

Wind Speed : N/A	Wind Direction: N/A	Temperature (°F): N/A
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On Site Emergency Response: Chevron Fire Department responded and tested atmosphere

Agencies Notified, including time of Notifications: N/A

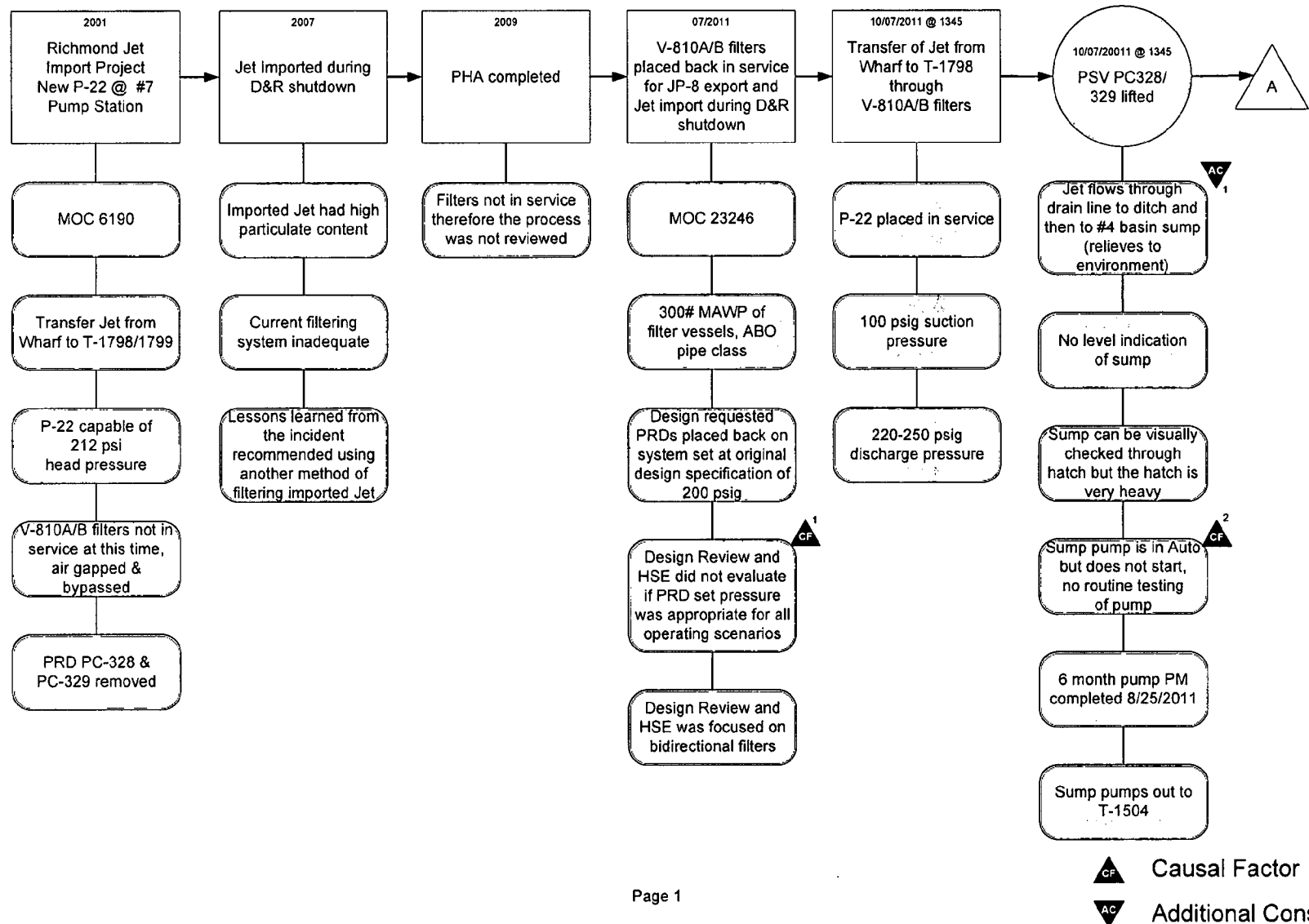
Off-Site Emergency Response: None

Report Approved by, Position & Date:

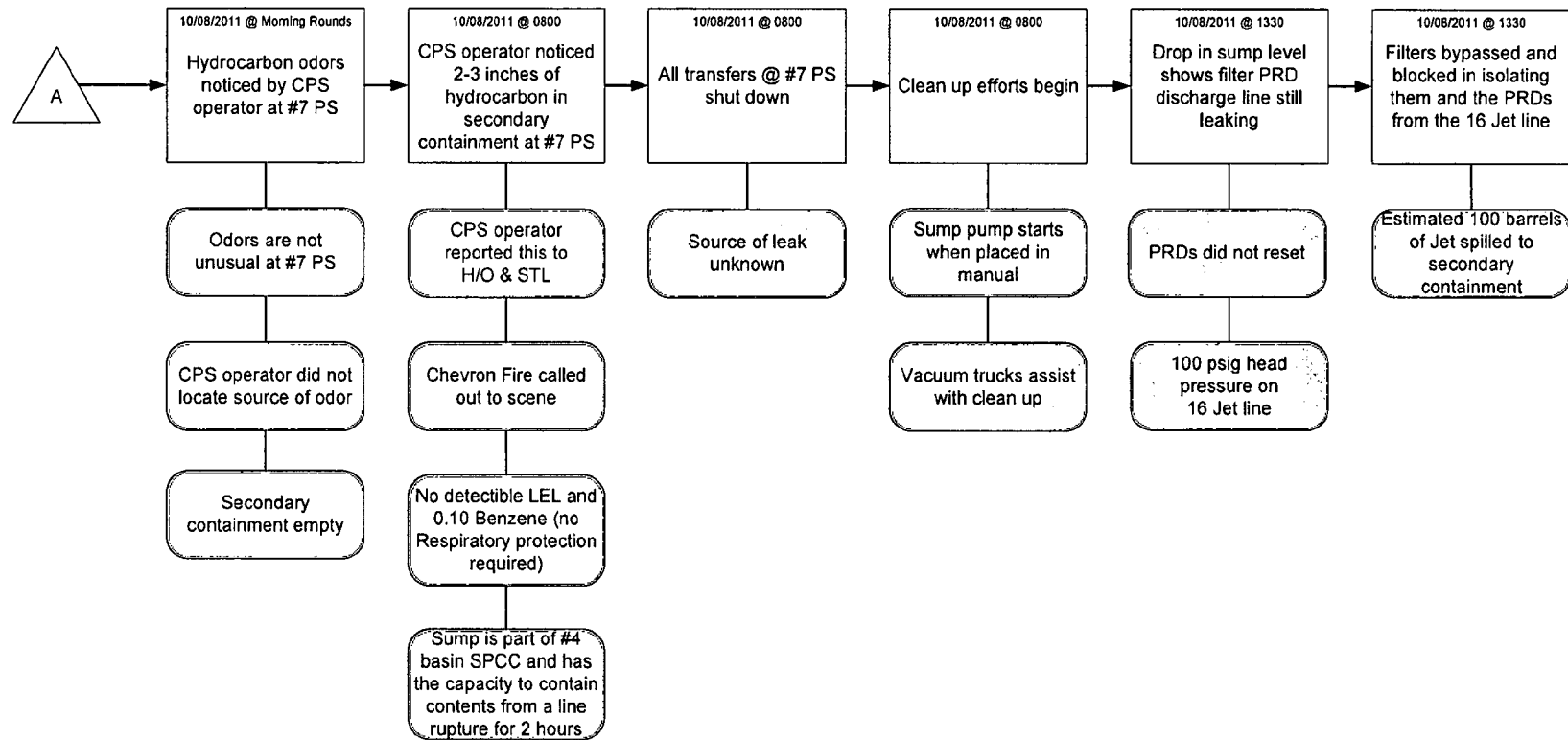
Cc: Investigation Team Members, HES Manager, Ref. Incident Coordinator, Ref. PSM Coordinator

CUSA-EPA-0000250

#7 Pump Station Jet Spill to Secondary Containment – Impact ERM #23483
Appendix I - Tap Root® Events & Causal Factors Chart®



#7 Pump Station Jet Spill to Secondary Containment – Impact ERM #23483
Appendix I - Tap Root® Events & Causal Factors Chart®



Event Title: #7 Pump Station Jet Spill to Secondary Containment
Appendix II RooT Cause Analysis®

Causal Factors are problems (whether conditions or events) that, if eliminated, would have prevented the incident from occurring or would have significantly mitigated its consequences.

Causal Factor #1: Design Review and HSE did not evaluate if PRD set pressure was appropriate for all operating scenarios

Background: A thorough evaluation of the impact of the change on the system should have reviewed all operating scenarios

Condition	Guide	Basic Cause Category	Near Root Cause	Root Cause	Basis	C/A	Assigned To Due By
Human Factors	Management System	Work Direction	Preparation	Work Package/ Permit NI	Was the work plan, work permit, hazard assessment, risk assessment, or other job planning tool or paperwork inadequate?	<p>Modify MOC database HSE form to prompt that the Thought Provoking Questions are reviewed.</p> <p>B&S Management will share the investigation with those involved in the original HSE and gain personal commitment from these individuals to conduct thorough evaluations in all future HSE reviews.</p>	<p>G. Lassen 11/30/2011</p> <p>Jon Mauer 01/31/2012</p>
Equipment Difficulty	Design	Design Review	Independent review NI	Hazard Analysis NI	Did the safety, environmental, or production significance of a process warrant an independent analysis of the process's hazards, but the hazard analysis was not performed or not sufficient to detect hazards that should have been recognized and corrected?	<p>Modify MOC database Design Review form to include Hydraulic Review checkbox.</p> <p>Ensure PRDs are set appropriately for all operating scenarios.</p> <p>Technical Design group will share the investigation learning's and discuss the importance of conducting thorough Hydraulic evaluations with regards to MOC's requiring piping circuit modifications.</p>	<p>G. Lassen 11/30/2011</p> <p>C. Raiford 01/31/2012</p> <p>Alan Lowell 01/31/2012</p>

Causal Factor #2: Sump pump is in Auto but does not start, no routine testing of pump

Background: Had pump been working it would have significantly mitigated the consequences

Condition	Guide	Basic Cause Category	Near Root Cause	Root Cause	Basis	C/A	Assigned To Due By
Equipment Difficulty	Equipment / Parts Defective	Quality Control	No Inspection	Inspection not required	Were equipment malfunctions or maintenance difficulties not discovered because of failure to perform reasonable, independent inspections, functional tests, or quality verification checks during or after completion of work?	<p>Redesign sump and pump to include level indication, high level alarms and run status of pump.</p> <p>Develop and implement routine duty to test level indication, high level alarms and pump.</p> <p>B&S Business Unit evaluate other sumps in the division, subject to similar risks. The evaluation should determine if the pump and sump instrumentation is appropriate to mitigate potential overflow incidents. If risks are identified, carry to URB process for evaluation & prioritization with other ABU risks.</p>	<p>Daryl Singleton 04/01/2012</p> <p>Daryl Singleton 04/01/2012</p> <p>Daryl Singleton 01/31/2012</p>

Event Title: #7 Pump Station Jet Spill to Secondary Containment
Appendix II Root Cause Analysis®

Additional Consideration #1: Jet flows through drain line to ditch and then to #4 basin sump (relieves to environment)

Basis	C/A	Assigned To Due By
Current design practices would route this to a closed system	Consider rerouting discharge to primary containment (T-1504)	Daryl Singleton 03/31/2012